

Effective Date: August 25, 2023

Expiration Date: August 25, 2028

**GSFC JPSS CMO
September 29, 2023
Released**

474-00448-01-26, Revision L
Joint Polar Satellite System (JPSS) Code 474

**Joint Polar Satellite System (JPSS)
Algorithm Specification Volume I:
Software Requirement Specification (SRS)
for the VIIRS Imagery**



NOAA / NASA

**Goddard Space Flight
Center Greenbelt, Maryland**

Joint Polar Satellite System (JPSS) Algorithm Specification Volume I: Software Requirement Specification (SRS) for the VIIRS Imagery

Review/Signature/Approval Page

Prepared By:

LEO Ground Services Systems Engineering

Approved By:

Kellyann F. Jeletic
LEO Ground Services Project SEIT Lead

Nicolaie Todirita
LEO Ground Services Project Manager

Electronic Approval available on-line at: https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm

Preface

This document is under JPSS Ground Segment (GS) configuration control. Once this document is approved, JPSS approved changes are handled in accordance with Class I and Class II change control requirements as described in the JPSS Configuration Management Procedures, and changes to this document shall be made by complete revision.

Any questions should be addressed to:

JPSS Configuration Management Office
NASA/GSFC
Code 474
Greenbelt, MD 20771

NOTE

NOAA's Office of Low Earth Orbit (LEO) Observations encompasses the Joint Polar Satellite System (JPSS) and Near Earth Orbit Network (NEON) Programs. The JPSS Ground Segment Project has evolved to the LEO Ground Services Project and its ground system serves the needs of both JPSS and NEON missions. For efficiency, documents created prior to the formulation of LEO Ground Services will retain legacy terminology (e.g., JPSS Ground Project, JPSS Ground System).

Change History Log

Revision	Effective Date	Description of Changes (Reference the CCR & CCB/ERB Approve Date)
Rev-	Aug. 29, 2013	This version incorporates 474-CCR-13-1178 which was approved by JPSS Ground ERB on the effective date shown.
A	Jan 23, 2014	This version incorporates 474-CCR-13-1457 which was approved by JPSS Ground ERB on the effective date shown.
A1	Oct 23, 2014	This version incorporates 474-CCR-14-2091 which was approved by the JPSS Ground ERB for CO10 on the effective date shown.
B	Nov 20, 2014	This version incorporates 474-CCR-14-1721, 474-CCR-14-1741, 474-CCR-14-1781, 474-CCR-14-1793 and 474-CCR-14-2120 which was approved by JPSS Ground ERB on the effective date shown.
C	Feb 12, 2016	This version incorporates 474-CCR-14-2110, 474-CCR-15-2452, 474-CCR-15-2480, 474-CCR-15-2657 and 474-CCR-16-2776 which was approved by JPSS Ground ERB on the effective date shown.
0200D	Sep 22, 2016	This version incorporates 474-CCR-16-2939 and 474-CCR-16-3049 which was approved by JPSS Ground ERB on the effective date shown.
0200E	Jan 11, 2017	This version incorporates 474-CCR-16-3199 which was approved by JPSS Ground ERB on the effective date shown.
0200F	Feb 09, 2018	This version incorporates 474-CCR-18-3822 which was approved by JPSS Ground ERB on the effective date shown.
G	Dec 14, 2018	This version incorporates 474-CCR-18-4203 . This version incorporates 0220A of 474-00448-01-26-B0220, dated 01/11/2017 to create this baseline. This was approved by the JPSS Ground ERB on the effective date shown.
H	Oct 24, 2019	This version incorporates 474-CCR-19-4584 which was approved by the JPSS Ground ERB on Oct 17, 2019 and by the JPSS Ground Segment CCB on the effective date shown.
I	Sep 14, 2020	This version incorporates 474-CCR-19-4697 which was approved by the JPSS Ground ERB on Nov 26, 2019 and by the JPSS Ground Segment CCB on Dec 5, 2019; 474-CCR-19-4719 which was approved by the JPSS Ground ERB on Mar 11, 2020 and by the JPSS Ground Segment CCB on Mar 26, 2020; 474-CCR-20-5127 which was approved by the JPSS Ground ERB on Jul 24, 2020 and by the JPSS Ground Segment CCB on Jul 30, 2020; 474-CCR-19-4631 which was approved by the JPSS Ground ERB on Jul 21, 2020 and by the JPSS Ground Segment CCB on Jul 30, 2020; 474-CCR-20-4960 which was approved by the JPSS Ground ERB on

		Apr 11, 2020 and by the JPSS Ground Segment CCB on the effective date shown.
J	Mar 09, 2021	This version incorporates 474-CCR-21-5418 which was approved by the JPSS Ground ERB on Mar 09, 2021 and by the JPSS Ground Segment CCB on the effective date shown.
K	Aug 26, 2021	This version incorporates 474-CCR-21-5445 which was approved by the JPSS Ground ERB on May 07, 2021 and by the JPSS Ground Segment CCB on the effective date shown.
L	Aug 25, 2023	This version incorporates 474-CCR-23-6749 which was approved by the JPSS Ground ERB on Aug 18, 2023 and by the JPSS Ground Segment CCB on the effective date shown. This version was baselined for the LGSS contract.

Table of Contents

1	INTRODUCTION	1
	1.1 Identification.....	1
	1.2 Algorithm Overview	1
	1.3 Document Overview	1
2	RELATED DOCUMENTATION	2
	2.1 Parent Documents	2
	2.2 Applicable Documents.....	2
3	ALGORITHM REQUIREMENTS.....	3
	3.1 States and Modes	3
	3.1.1 Normal Mode Performance.....	3
	3.1.2 Graceful Degradation Mode Performance	3
	3.2 Algorithm Functional Requirements.....	3
	3.2.1 Product Production Requirements	3
	3.2.2 Algorithm Science Requirements	3
	3.2.3 Algorithm Exception Handling.....	3
	3.3 External Interfaces	4
	3.3.1 Inputs.....	4
	3.3.2 Outputs.....	10
	3.4 Science Standards	11
	3.5 Metadata Output.....	11
	3.6 Quality Flag Content Requirements.....	11
	3.7 Data Quality Notification Requirements	12
	3.8 Adaptation.....	13
	3.9 Provenance Requirements.....	13
	3.10 Computer Software Requirements.....	13
	3.11 Software Quality Characteristics	13
	3.12 Design and Implementation Constraints.....	13
	3.13 Personnel Related Requirements	15
	3.14 Training Requirements.....	15
	3.15 Logistics Related Requirements	15
	3.16 Other Requirements	15
	3.17 Packaging Requirements.....	15
	3.18 Precedence and Criticality	15
	APPENDIX A. REQUIREMENTS ATTRIBUTES	16

List of Figures

Figure: 3-1 VIIRS Imagery Data Flows..... 6

List of Tables

Table: 3-1 Systems Resource Flow Matrix: VIIRS Imagery..... 7

1 INTRODUCTION

The Joint Polar Satellite System (JPSS) is the National Oceanic and Atmospheric Administration's (NOAA) next-generation operational Earth observation program that acquires and distributes global environmental data primarily from multiple polar-orbiting satellites. The program plays a critical role in NOAA's mission to understand and predict changes in weather, climate, oceans and coasts, and the space environment, which support the Nation's economy and protect lives and property. For information regarding the JPSS Program, missions, instruments, and partners, see the JPSS website at <https://www.jpss.noaa.gov/>.

1.1 Identification

This SRS provides requirements for the VIIRS Imagery Environmental Data Records (EDRs), generated from all 5 I-bands, a Day Night Band (DNB), and all 16 M-bands.

1.2 Algorithm Overview

The algorithm merely transforms the VIIRS SDRs to a Ground-Track Mercator (GTM) projection. All imagery products report a top-of-atmosphere radiance. In addition, emissive-band imagery reports a top-of-atmosphere brightness temperature, and reflective-band imagery reports a top-of-atmosphere reflectance.

1.3 Document Overview

Section	Description
Section 1	Introduction - Provides a brief overview of the JPSS Ground System and the relevant algorithm, as reference material only.
Section 2	Related Documentation - Lists related documents and identifies them as Parent, Applicable, or Information Documents such as, MOAs, MOUs, technical implementation agreements, as well as Data Format specifications. This section also establishes an order of precedence in the event of conflict between two or more documents.
Section 3	Algorithm Requirements - Provides a summary of the science requirements for the products covered by this volume.
Appendix A	Requirements Attributes - Provides the mapping of requirements to verification methodology and attributes.

2 RELATED DOCUMENTATION

The latest JPSS documents can be obtained from URL:

https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm. JPSS Project documents have a document number starting with 470, 472 or 474 indicating the governing Configuration Control Board (CCB) (Program, Flight, or Ground) that has the control authority of the document.

2.1 Parent Documents

The following reference documents are the Parent Documents from which this document has been derived. Any modification to a Parent Document will be reviewed to identify the impact upon this document. In the event of a conflict between a Parent Document and the content of this document, the JPSS Program Configuration Change Board has the final authority for conflict resolution.

Doc. No.	Document Title
474-01541	Joint Polar Satellite System (JPSS) Ground System Requirements Document (GSRD)
474-01543	Joint Polar Satellite System (JPSS) Ground Segment Data Product Specification
474-00448-01-01	Joint Polar Satellite System (JPSS) Algorithm Specification Volume I: Software Requirements Specification (SRS) for the Common Algorithms

2.2 Applicable Documents

The following documents are the Applicable Documents from which this document has been derived. Any modification to an Applicable Document will be reviewed to identify the impact upon this document. In the event of conflict between an Applicable Document and the content of this document, the JPSS Program Configuration Change Board has the final authority for conflict resolution.

Doc. No.	Document Title
474-00448-02-26	Joint Polar Satellite System (JPSS) Algorithm Specification Volume II: Data Dictionary for the VIIRS Imagery
474-00448-04-26	Joint Polar Satellite System (JPSS) Algorithm Specification Volume IV: Software Requirements Specification Parameter File (SRSPF) for the VIIRS Imagery

3 ALGORITHM REQUIREMENTS

3.1 States and Modes

3.1.1 Normal Mode Performance

Not applicable

3.1.2 Graceful Degradation Mode Performance

Not applicable

3.2 Algorithm Functional Requirements

3.2.1 Product Production Requirements

Not applicable

3.2.2 Algorithm Science Requirements

Not applicable

3.2.3 Algorithm Exception Handling

SRS.01.26_147 The VIIRS NCC Imagery EDR software shall set each <FillField> to <FillValue> according to <FillCondition> specified in the JPSS Algorithm Specification Vol IV: SRSPF for VIIRS Imagery (474-00448-04-26) <NCC_EDR><fill>.

Rationale: The EDR software through its computing algorithm must fill the NCC Imagery EDR values based on the established fill conditions to satisfy exclusion and fill conditions.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_165 The VIIRS Reflective I-band Imagery EDR software shall set each <FillField> to <FillValue> according to <FillCondition> specified in the JPSS Algorithm Specification Vol IV: SRSPF for VIIRS Imagery (474-00448-04-26) <Refl_I1-3_EDR><fill>.

Rationale: The EDR software through its computing algorithm must fill the Reflective I-band Imagery EDR values based on the established fill conditions to satisfy exclusion and fill conditions.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_180 The VIIRS Emissive I-band Imagery EDR software shall set each <FillField> to <FillValue> according to <FillCondition> specified in the JPSS Algorithm Specification Vol IV: SRSPF for VIIRS Imagery (474-00448-04-26) <Emiss_I4-5_EDR><fill>.

Rationale: The EDR software through its computing algorithm must fill the Emissive I-band Imagery EDR values based on the established fill conditions to satisfy exclusion and fill conditions.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_196 The VIIRS Reflective M-band Imagery EDR software shall set each <FillField> to <FillValue> according to <FillCondition> specified in the JPSS Algorithm Specification Vol IV: SRSPF for VIIRS Imagery (474-00448-04-26) <Refl_M_EDR><fill>.

Rationale: The EDR software through its computing algorithm must fill the Reflective M-band Imagery EDR values based on the established fill conditions to satisfy exclusion and fill conditions.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_210 The VIIRS Emissive M-band Imagery EDR software shall set each <FillField> to <FillValue> according to <FillCondition> specified in the JPSS Algorithm Specification Vol IV: SRSPF for VIIRS Imagery (474-00448-04-26) <Emiss_M_EDR><fill>.

Rationale: The EDR software through its computing algorithm must fill the Emissive M-band Imagery EDR values based on the established fill conditions to satisfy exclusion and fill conditions

Block Start: 2.0.0 *Block End:* 3.0.0

3.3 External Interfaces

3.3.1 Inputs

SRS.01.26_150 The VIIRS NCC Imagery EDR software shall incorporate inputs per Table 3-1.

Rationale: The EDR generation software must be able to receive and process the resource interaction items shown in Table 3-1 in order to produce the intended NCC Imagery EDR products.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_168 The VIIRS Reflective I-band Imagery EDR software shall incorporate inputs per Table 3-1.

Rationale: The EDR generation software must be able to receive and process the resource interaction items shown in Table 3-1 in order to produce the intended Reflective I-band Imagery EDR products.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_182 The VIIRS Emissive I-band Imagery EDR software shall incorporate inputs per Table 3-1.

Rationale: The EDR generation software must be able to receive and process the resource interaction items shown in Table 3-1 in order to produce the intended Emissive I-band Imagery EDR products.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_199 The VIIRS Reflective M-band Imagery EDR software shall incorporate inputs per Table 3-1.

Rationale: The EDR generation software must be able to receive and process the resource interaction items shown in Table 3-1 in order to produce the intended Reflective M-band Imagery EDR products.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_212 The VIIRS Emissive M-band Imagery EDR software shall incorporate inputs per Table 3-1.

Rationale: The EDR generation software must be able to receive and process the resource interaction items shown in Table 3-1 in order to produce the intended Emissive M-band Imagery EDR products.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_306 The VIIRS NCC Imagery EDR software shall input tables and coefficients specified in Table 3-1 formatted in accordance with JPSS Algorithm Specification Vol II: Data Dictionary for VIIRS Imagery (474-00448-02-26), Section 7.

Rationale: This defines the formats for Lookup Tables, and Processing Coefficients for input into the algorithm module.

Block Start: 2.0.0 *Block End:* 3.0.0

Table 3-1 and Figure 3-1 are best viewed together since they describe the processes governed by this SRS in different ways. The figure diagrams the data flowing into, out of, and within the code governed by this SRS. The table lists these same data interactions as well as all downstream dependencies for outputs from this SRS.

Each row in the table describes a single software interaction - data flowing from one software item to another. The data is listed in the first column. The second and third columns include the short name and mnemonic for the data. Blanks indicate there is no mnemonic. The fourth and fifth columns contain the SRS that generates the data product(s) in the first column, and the SRS that receives those products. The final two columns contain the actual function name in Algorithm Development Library (ADL) that produces those products, and the function that inputs those products. The SRS's titled "Ingest MSD" and "Store/Retrieve" are non-existent SRS's functioning as data handling for the IDPS. The software functions "Store Products" and "Retrieve Products" are similar non-existent functions that operate as IDPS data handling.

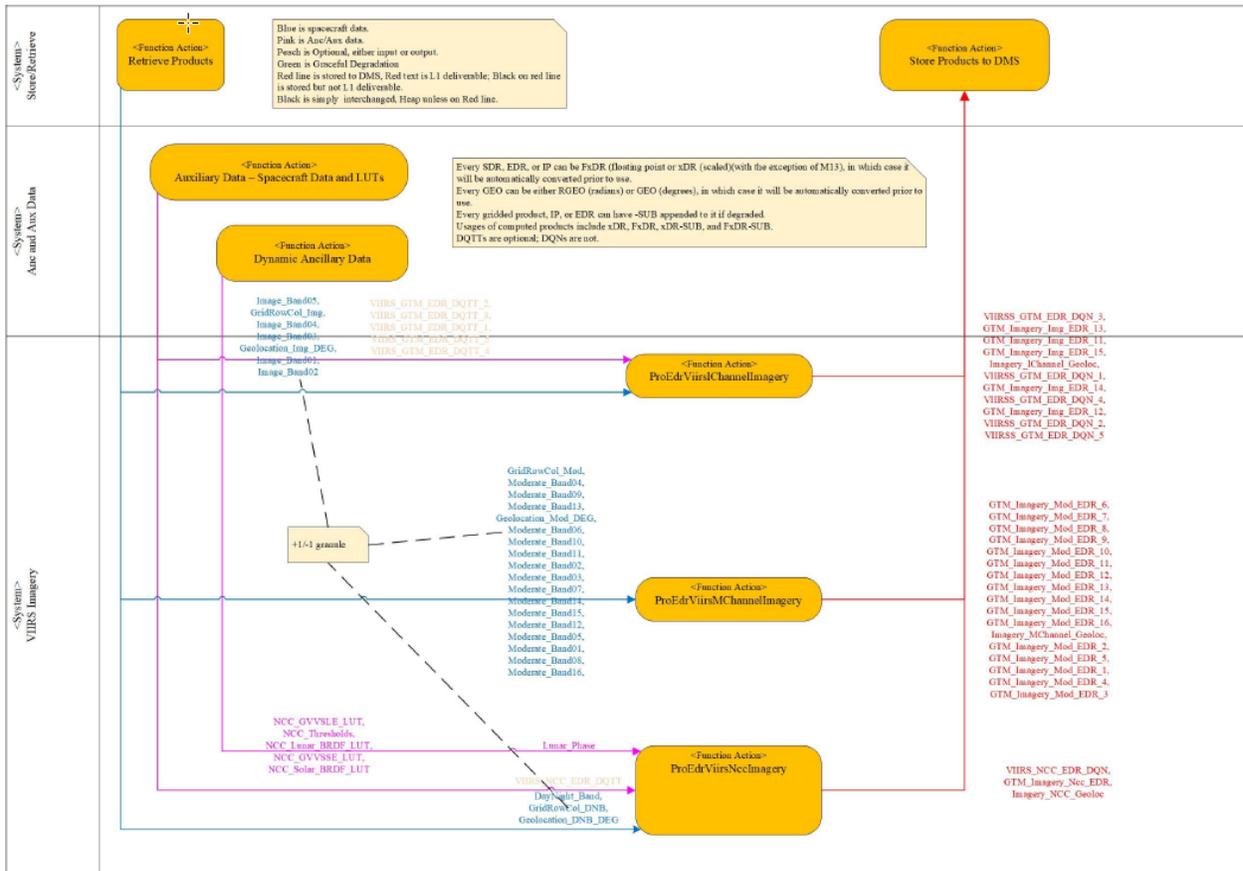


Figure: 3-1 VIIRS Imagery Data Flows

Table: 3-1 Systems Resource Flow Matrix: VIIRS Imagery

	Data Product Name	Collection Short Name	Mnemonic	Sending SRS	Receiving SRS	Sending Function	Receiving Function
1	<ul style="list-style-type: none"> •Image_Band05 •GridRowCol_Img •Image_Band04 •Image_Band03 •Geolocation_Img_DEG •Image_Band01 •Image_Band02 	<ul style="list-style-type: none"> •VIIRS-I5-SDR •VIIRS-IMG-GRC •VIIRS-I4-SDR •VIIRS-I3-SDR •VIIRS-IMG-GEO •VIIRS-I1-SDR •VIIRS-I2-SDR 	<ul style="list-style-type: none"> •SDRE-VI05-C0030 •None •SDRE-VI04-C0030 •SDRE-VI03-C0030 •None •SDRE-VI01-C0030 •SDRE-VI02-C0030 	Store/Retrieve (VIIRS SDR)	VIIRS Imagery	Retrieve Products	ProEdrViirsIChannelImagery
2	<ul style="list-style-type: none"> •GridRowCol_Mod •Moderate_Band04 •Moderate_Band09 •Moderate_Band13 •Geolocation_Mod_DEG •Moderate_Band06 •Moderate_Band10 •Moderate_Band11 •Moderate_Band02 •Moderate_Band03 •Moderate_Band07 •Moderate_Band14 •Moderate_Band15 •Moderate_Band12 •Moderate_Band05 •Moderate_Band01 •Moderate_Band08 •Moderate_Band16 	<ul style="list-style-type: none"> •VIIRS-MOD-GRC •VIIRS-M4-SDR •VIIRS-M9-SDR •VIIRS-M13-SDR •VIIRS-MOD-GEO •VIIRS-M6-SDR •VIIRS-M10-SDR •VIIRS-M11-SDR •VIIRS-M2-SDR •VIIRS-M3-SDR •VIIRS-M7-SDR •VIIRS-M14-SDR •VIIRS-M15-SDR •VIIRS-M12-SDR •VIIRS-M5-SDR •VIIRS-M1-SDR •VIIRS-M8-SDR •VIIRS-M16-SDR 	<ul style="list-style-type: none"> •None •SDRE-VM04-C0030 •SDRE-VM09-C0030 •SDRE-VM13-C0030 •None •SDRE-VM06-C0030 •SDRE-VM10-C0030 •SDRE-VM11-C0030 •SDRE-VM02-C0030 •SDRE-VM03-C0030 •SDRE-VM07-C0030 •SDRE-VM14-C0030 •SDRE-VM15-C0030 •SDRE-VM12-C0030 •SDRE-VM05-C0030 •SDRE-VM01-C0030 •SDRE-VM08-C0030 •SDRE-VM16-C0030 	Store/Retrieve (VIIRS SDR)	VIIRS Imagery	Retrieve Products	ProEdrViirsMChannelImagery
3	<ul style="list-style-type: none"> •DayNight_Band •GridRowCol_DNB •Geolocation_DNB_DEG 	<ul style="list-style-type: none"> •VIIRS-DNB-SDR •VIIRS-DNB-GRC •VIIRS-DNB-GEO 	<ul style="list-style-type: none"> •SDRE-VDNB-C0030 •None •None 	Store/Retrieve (VIIRS SDR)	VIIRS Imagery	Retrieve Products	ProEdrViirsNcclmagery
4	<ul style="list-style-type: none"> •VIIRS_GTM_EDR_DQTT_2 •VIIRS_GTM_EDR_DQTT_3 •VIIRS_GTM_EDR_DQTT_1 •VIIRS_GTM_EDR_DQTT_5 •VIIRS_GTM_EDR_DQTT_4 	<ul style="list-style-type: none"> •VIIRS-I2-IMG-EDR-DQTT •VIIRS-I3-IMG-EDR-DQTT •VIIRS-I1-IMG-EDR-DQTT •VIIRS-I5-IMG-EDR-DQTT •VIIRS-I4-IMG-EDR-DQTT 	<ul style="list-style-type: none"> •DP_NU-LM2030-000 •DP_NU-LM2030-000 •DP_NU-LM2030-000 •DP_NU-LM2030-000 •DP_NU-LM2030-000 	Anc and Aux Data	VIIRS Imagery	Auxiliary Data - Spacecraft Data and LUTs	ProEdrViirsIChannelImagery

	Data Product Name	Collection Short Name	Mnemonic	Sending SRS	Receiving SRS	Sending Function	Receiving Function
			<ul style="list-style-type: none"> •EDRE-VMOD-C0030 •EDRE-VMOD-C0030 •EDRE-VMOD-C0030 •EDRE-VMOD-C0030 •EDRE-VMOD-C0030 				
10	<ul style="list-style-type: none"> •VIIRS_GTM_EDR_DQN_3 •GTM_Imagery_Img_EDR_I3 •GTM_Imagery_Img_EDR_I1 •GTM_Imagery_Img_EDR_I5 •Imagery_IChannel_Geoloc •VIIRS_GTM_EDR_DQN_1 •GTM_Imagery_Img_EDR_I4 •VIIRS_GTM_EDR_DQN_4 •GTM_Imagery_Img_EDR_I2 •VIIRS_GTM_EDR_DQN_2 •VIIRS_GTM_EDR_DQN_5 	<ul style="list-style-type: none"> •VIIRS-I3-IMG-EDR-DQN •VIIRS-I3-IMG-EDR •VIIRS-I1-IMG-EDR •VIIRS-I5-IMG-EDR •VIIRS-IMG-GTM-EDR-GEO •VIIRS-I1-IMG-EDR-DQN •VIIRS-I4-IMG-EDR •VIIRS-I4-IMG-EDR-DQN •VIIRS-I2-IMG-EDR •VIIRS-I2-IMG-EDR-DQN •VIIRS-I5-IMG-EDR-DQN 	<ul style="list-style-type: none"> DP_NU-L00090-001 •EDRE-IMAG-C0030 •EDRE-IMAG-C0030 •EDRE-IMAG-C0030 •None •DP_NU-L00090-001 •EDRE-IMAG-C0030 •DP_NU-L00090-001 •EDRE-IMAG-C0030 •DP_NU-L00090-001 •DP_NU-L00090-001 	VIIRS Imagery	Store/Retrieve	ProEdrViirsIChannelImagery	Store Products to DMS

3.3.2 Outputs

SRS.01.26_148 The VIIRS NCC Imagery EDR software shall generate the near-constant contrast imagery EDR for the day/night band in conformance with the XML format file in Attachment A.24 of the JPSS Algorithm Specification Vol II: Data Dictionary for VIIRS Imagery (474-00448-02-26).

Rationale: The product profile must conform to the XML format file.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_166 The VIIRS Reflective I-band Imagery EDR software shall generate the reflective I-band imagery EDR for I1, I2, and I3 in conformance with the XML format file in Attachments A.1 - A.3 of the JPSS Algorithm Specification Vol II: Data Dictionary for VIIRS Imagery (474-00448-02-26).

Rationale: The product profile must conform to the XML format file.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_149 The VIIRS NCC Imagery EDR software shall generate the EDR geolocation product in conformance with the XML format file in Attachment A.23 of the JPSS Algorithm Specification Vol II: Data Dictionary VIIRS EDR (474-00448-02-26).

Rationale: The geolocation for NCC Imagery EDR is based on the DNB SDR geolocation.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_167 The VIIRS I-band Imagery EDR software shall generate the I- band EDR geolocation product in conformance with the XML format file in Attachment A.6 of the JPSS Algorithm Specification Vol II: Data Dictionary VIIRS EDR (474-00448-02-26).

Rationale: The geolocation for I-band Imagery EDR is based on the I-band SDR geolocation.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_181 The VIIRS Emissive I-band Imagery EDR software shall generate the emissive I-band imagery EDR for I4 and I5 in conformance with the XML format file in Attachments A.4 and A.5 of the JPSS Algorithm Specification Vol II: Data Dictionary for VIIRS Imagery (474-00448-02-26).

Rationale: The product profile must conform to the XML format file.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_197 The VIIRS Reflective M-band Imagery EDR software shall generate the reflective M-band imagery EDR, in conformance with the XML format file in Attachments A.7 - A.22 of Vol II of the JPSS Algorithm Specification Vol II: Data Dictionary for VIIRS Imagery (474-00448-02-26).

Rationale: The product profile must conform to the XML format file.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_198 The VIIRS M-band Imagery EDR software shall generate the M-Band EDR geolocation product in conformance with the XML format file in Attachment A.25 of the JPSS Algorithm Specification Vol II: Data Dictionary VIIRS EDR (474-00448-02-26).

Rationale: The geolocation for M-band Imagery EDR is based on the M-band SDR geolocation.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_211 The VIIRS Emissive M-band Imagery EDR software shall generate the emissive M-band imagery EDR, in conformance with the XML format file in Attachment A.7-A.22 of the JPSS Algorithm Specification Vol II: Data Dictionary for VIIRS Imagery (474-00448-02-26).

Rationale: The product profile must conform to the XML format file.

Block Start: 2.0.0 *Block End:* 3.0.0

3.4 Science Standards

Not applicable

3.5 Metadata Output

Not applicable

3.6 Quality Flag Content Requirements

SRS.01.26_157 The VIIRS NCC Imagery EDR software shall report for each <FlagScope> quality flags using <FlagLogic> as specified in the JPSS Algorithm Specification Vol IV: SRSPF for VIIRS Imagery (474-00448-04-26) <NCC_EDR><QF>.

Rationale: Quality Flags must be generated based on the established flag conditions, logic, and format.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_158 The VIIRS NCC Imagery GEO software shall report for each <FlagScope> quality flags using <FlagLogic> as specified in the JPSS Algorithm Specification Vol IV: SRSPF for VIIRS Imagery (474-00448-04-26) <NCC_GEO><QF>.

Rationale: Quality Flags must be generated based on the established flag conditions, logic, and format.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_174 The VIIRS Reflective I-band Imagery EDR software shall report for each <FlagScope> quality flags using <FlagLogic> as specified in the SRSPF <Refl_I1-3_EDR><QF>.

Rationale: Quality Flags must be generated based on the established flag conditions, logic, and format.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_175 The VIIRS I-band Imagery GEO software shall report for each <FlagScope> quality flags using <FlagLogic> as specified in the JPSS Algorithm Specification Vol IV: SRSPF for VIIRS Imagery (474-00448-04-26) <IbandGEO><QF>.

Rationale: Quality Flags must be generated based on the established flag conditions, logic, and format.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_188 The VIIRS Emissive I-band Imagery EDR software shall report for each <FlagScope> quality flags using <FlagLogic> as specified in the JPSS Algorithm Specification Vol IV: SRSPF for VIIRS Imagery (474-00448-04-26) <Emiss_I4-5_EDR><QF>.

Rationale: Quality Flags must be generated based on the established flag conditions, logic, and format.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_204 The VIIRS M-band Imagery GEO software shall report for each <FlagScope> quality flags using <FlagLogic> as specified in the JPSS Algorithm Specification Vol IV: SRSPF for VIIRS Imagery (474-00448-04-26) <MbandGEO><QF>.

Rationale: Quality Flags must be generated based on the established flag conditions, logic, and format.

Block Start: 2.0.0 *Block End:* 3.0.0

3.7 Data Quality Notification Requirements

SRS.01.26_151 The VIIRS NCC Imagery EDR software shall send data quality notifications to the operator according to logic specified in the JPSS Algorithm Specification Vol IV: SRSPF for VIIRS Imagery (474-00448-04-26) <NCC_EDR> <notification>.

Rationale: Notifications must be generated and sent based on the established logic and conditions.

Block Start: 2.0.0 *Block End:* 3.0.0

3.8 Adaptation

Not applicable

3.9 Provenance Requirements

Not applicable

3.10 Computer Software Requirements

Not applicable

3.11 Software Quality Characteristics

Not applicable

3.12 Design and Implementation Constraints

SRS.01.26_143 The Common Ground System shall execute the top-of-atmosphere pseudo albedo algorithm.

Rationale: The CGS must incorporate algorithm changes that are supplied by the algorithm vendor.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_159 The Common Ground System shall execute the top-of-atmosphere radiance algorithm.

Rationale: The CGS must incorporate algorithm changes that are supplied by the algorithm vendor.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_160 The Common Ground System shall execute the top-of-atmosphere reflectance algorithm.

Rationale: The CGS must incorporate algorithm changes that are supplied by the algorithm vendor.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_161 The Common Ground System shall execute the Ground Track Mercator mapping algorithm.

Rationale: The CGS must incorporate algorithm changes that are supplied by the algorithm vendor.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_176 The Common Ground System shall execute the top-of-atmosphere radiance algorithm.

Rationale: The CGS must incorporate algorithm changes that are supplied by the algorithm vendor.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_177 The Common Ground System shall execute the top-of-atmosphere brightness temperature algorithm.

Rationale: The CGS must incorporate algorithm changes that are supplied by the algorithm vendor.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_189 The Common Ground System shall execute the top-of-atmosphere radiance algorithm.

Rationale: The CGS must incorporate algorithm changes that are supplied by the algorithm vendor.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_190 The Common Ground System shall execute the top-of-atmosphere reflectance algorithm.

Rationale: The CGS must incorporate algorithm changes that are supplied by the algorithm vendor.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_191 The Common Ground System shall execute the Ground Track Mercator mapping algorithm.

Rationale: The CGS must incorporate algorithm changes that are supplied by the algorithm vendor.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_205 The Common Ground System shall execute the top-of-atmosphere radiance algorithm.

Rationale: The CGS must incorporate algorithm changes that are supplied by the algorithm vendor.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.26_206 The Common Ground System shall execute the top-of-atmosphere brightness temperature algorithm.

Rationale: The CGS must incorporate algorithm changes that are supplied by the algorithm vendor.

Block Start: 2.0.0 *Block End:* 3.0.0

3.13 Personnel Related Requirements

Not applicable

3.14 Training Requirements

Not applicable

3.15 Logistics Related Requirements

Not applicable

3.16 Other Requirements

Not applicable

3.17 Packaging Requirements

Not applicable

3.18 Precedence and Criticality

Not applicable

Appendix A. Requirements Attributes

The Requirements Attributes can be found in the VCRMs at Ground > Mission System Engineering > Ground SEIT Unrestricted > VCRM

<https://jpss.gsfc.nasa.gov/sites/ground/MSE/9/Forms/AllItems.aspx?RootFolder=%2Fsites%2Fground%2FMSE%2F9%2FVCRM&FolderCTID=0x012000D0555EA1A211E64A9A7DE7CBCE72DE8B&View=%7B4267AEFE%2D7E8B%2D402D%2D919D%2D41BED55BA4E7%7D>